DOCUMENT RESUME

ED 045 813 VT 011 932

AUTHOR Iewis, Wiley B.
TITLE Review and Analysis of Curricula Fcr Occupaticns in Public Services. Information Series No. 29.
INSTITIUTICN Chio State Univ., Columbus. Center for Vocational and Technical Education.
SPONS AGENCY Cffice of Education (DHEW), Washington, D.C.
PUB DATE Nov 70
NOTE 39p.
AVAILABLE FRCM The Center for Vocational and Technical Education, The Ohio State University, 1900 Kenny Road, Columbus, Ohio 43210

EDRS PRICE EDRS Price MF-$0.25 HC-$2.05
DESCRIPTORS Bibliographies, *Curriculum Development, Curriculum Evaluation, Curriculum Planning, Educational Needs, Employment Qualifications, Fire Fighters, Government Emplcyees, Job Skills, Police, Probation Officers, *Research Reviews (Publications), *Service Cccupations, Social Workers, Subprofessionals, Systems Analysis, *Vocational Education

ABSTRACI

To identify majcr findings, promising developments, strategies, and methodological strengths and weaknesses which exist in curricula designed for training paraprofessional public service workers in the fields of education, social work, law enforcement, and fire fighting, a review and analysis was made of Educational Resources Infcrmation Center (ERIC) publications and non-ERIC publicaticns. Ic correct an imbalance of too many low skilled workers and too few skilled workers, educational programs based on occupaticnal analysis and student needs should be devised to prepare low skilled wcrkers for available occupations. Based on projected employment cpportunities, primary consideration should be given tc programs in sccial work and law enforcement and then education and firefighting. While curricula and curriculum materials are available for the four fields, improvements are needed and changes will be necessary. Ic acccmplish this, curricula should be developed and evaluated thrcugh an educational planning system which involves occupational analysis, program planning, program development and testing, and dccumentation and dissemination of results. Other improvements will also be needed in the areas of counseling, recruiting students, and expanding present programs. (SB)

Information

Series No. 29

VT 011 932

EDO 45813

review and analysis of curricula for

Occupations in Public Services

ERIC

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VT011 932

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ED045813

Information Series No. 29
VT 011 932

REVIEW AND ANALYSIS OF CURRICULA FOR OCCUPATIONS IN PUBLIC SERVICES

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ERIC Clearinghouse on Vocational and Technical Education
The Center for Vocational and Technical Education
The Ohio State University
1900 Kenny Road
Columbus, Ohio 43210

November 1970

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PREFACE

This *Review and Analysis of Curricula for Occupations in Public Services* is one of a series of information analysis papers in vocational and technical education and related fields. It should aid curriculum development specialists, researchers, and practitioners in assessing the current "state of the art" in the field. The compact nature of the review should be of assistance to practitioners in identifying current curriculum offerings and useful materials to improve operating programs. It should also assist in identifying voids in our present research and development framework and enhance future studies, both in terms of their substantive focus and methodological approaches.

Where ERIC document numbers and ERIC Document Reproduction Service (EDRS) prices are cited, the documents are available in microfiche and hard copy forms.

The profession is indebted to Wiley B. Lewis, Virginia Polytechnic Institute and State University, for his scholarship in the preparation of this report. Recognition is also due Arthur Jensen, director, Vocational Education Media Center, Clemson University; and Russell W. Adams, Northern Michigan University, for their critical review of the manuscript prior to its final revision and publication. J. David McCracken, information specialist at The Center, coordinated the publication's development.

Members of the profession are invited to suggest specific topics or problems for future reviews.

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INTRODUCTION

Job openings in public service occupations are expected to increase at a rapid rate during the 1970's because of an increasing concern toward the attainment of national goals. Two of the 16 national goals listed by Lecht (1968)—education and social welfare— will serve as the bases for most of this increase. The education goal involves increasing the quality and availability of education while the social welfare goal is basically concerned with the promise of American life, a minimum standard of living, and with translating this promise into a closer approximation to reality for the aged, the dependent, the discriminated against, the disabled, and the unemployed (Lecht, 1968).

Several socioeconomic, political, and technological factors are creating the need for personnel in these occupations. The most important of these factors are:

1. Population growth which results in additional persons requiring public services;
2. Public expectations include more and better public services along with more equal distribution of these services;
3. Government involvement in planning and implementing Federal public service programs and in providing financial support has made such services available to more people;
4. Private and public costs resulting from the lack of such services are being recognized as a hindrance to socioeconomic development; and
5. Advances being made in the sciences of physiology, psychology, sociology, and technology have revealed the need for and made additional public services possible.

These factors have contributed to the development of a need for additional facilities and personnel to meet the growing demands for public services. Decreasing the gap between the potentialities of modern public service knowhow and the availability of such services to Americans is an important national objective. However, the lack of an adequate supply of trained public service workers can frustrate the attainment of this objective and high-priority national objectives in many fields.

When the term public service is mentioned, one might envision several different fields of endeavor. For the purpose of this review and analysis, public service will center around the four occupational categories listed below.

1. Education
2. Firefighting
3. Law Enforcement
4. Social Welfare

Primary attention will be directed toward occupations in these categories for which individuals might be prepared in vocational education programs. Further information concerning these categories and/or some of their component occupations may be obtained by referring to the *Dictionary of Occupational Titles, 1965* and its supplements.

A rapidly growing demand for public service manpower coupled with the current situation of a slowly increasing supply has two principal implications for planning in vocational education. First, the rapid expansion in public services required to meet public and private needs means a parallel expansion in a broad spectrum of employment opportunities for trained service workers. Second, it implies an expanding base of job opportunities for individuals in the "left out" groups in American society.

Statement of the Problem

Projected demands for increased numbers of health workers have resulted in a need to synthesize information related to the training of skilled workers for public service occupations with special emphasis directed toward curricula for emerging occupations. As new technological and scientific findings are developed, or as shifts occur in job performance patterns, many existing occupational curricula will require revision or completely new approaches. Thus, providing instruction in the occupational areas important in the 1970's will be a challenge to those persons responsible for the programs. This analysis of literature related to public service occupations was undertaken in an effort to help these individuals:

1. Assess the availability and current development of curricula, materials, and guides for their development and use;
2. Identify promising developments and findings in public service occupations; and
3. Identify and describe the major conclusions and future research and development alternatives.

To help in meeting these needs, the remainder of this report will be directed toward accomplishing the following objectives:

1. To determine if additional educational programs are needed, and if so, identify which occupational areas require instructional emphasis;
2. To determine if curricula and curriculum materials are presently available for use in preparing students for occupational areas identified as important;
3. To identify the techniques and procedures used for developing available curricula and for providing instruction; and
4. To identify the techniques and procedures which should be used for developing curricula and for providing instruction in the future.

TABLE OF CONTENTS

Page

PREFACE iii

INTRODUCTION v
Statement of the Problem vi

REVIEW AND ANALYSIS OF THE LITERATURE 3
Need for Educational Programs 3
Curricula and Curriculum Materials 8
Curriculum Development 10
Methodology of Curriculum Development 14
Summary 19

DESCRIPTION OF THE BIBLIOGRAPHY 20
Compilation 20
Organization 21
Availability of Documents 22

BIBLIOGRAPHY 23
Literature—Identified from ERIC Sources 23
Literature—Identified from Non-ERIC Sources 31

REVIEW AND ANALYSIS OF CURRICULA FOR OCCUPATIONS IN PUBLIC SERVICES

REVIEW AND ANALYSIS OF THE LITERATURE

Publications and documents listed in the bibliography were reviewed and analyzed in an effort to identify the major findings, promising developments, strategies, and methodological strengths and weaknesses which exist in curricula designed for training public service workers. Such a review and analysis was believed to be important to those persons responsible for educational programs related to public service occupations.

Need for Educational Programs

According to Killingsworth, "The great paradox of this age of affluence is a great surplus of low skilled workers coexisting with shortages of skilled workers" (Riessman, n.d.). To correct this situation, programs should be devised and initiated to prepare low skilled workers for employment in available occupations or efforts should be made to redesign the occupational structure to utilize individuals with lower skill levels.

Americans for Democratic Action, at its 1966 convention, proposed that five million jobs for nonprofessional or paraprofessional workers be created in public services including police aides, recreation aides, homemakers, welfare aides, and code enforcement inspectors (Riessman, n.d.). Though this number of paraprofessional jobs has not been created, initial efforts have begun and Congress has enacted the Scheur-Nelson Sub-professional Career Act, in addition to its other educational legislation, which provides funds to train the untrained and unemployed and use them in these needed jobs.

The value of the nonprofessional has been widely recognized. Available information has indicated that in manpower programs, the presence of nonprofessionals has increased the job effectiveness of professionals in the same agency and has been felt by the target population (Grosser, 1967). On the other hand, it was shown that professionals and administrators have often used nonprofessionals as "shock troops" to increase quickly the gross statistics of clients served by the agency. In addition, training and promotion opportunities for nonprofessionals were found to be lacking. In spite of these conditions, Grosser (1967) concluded that the only foreseeable solution to chronic manpower shortages in the service professions is in the use of nonprofessionals. Greater use of this type of worker also was recommended by Clayton (1969).

Increasingly, proposals are emerging for the large scale employment of nonprofessionals in the human services where inexperienced people learn to perform jobs normally alloted to professionals (Riessman, 1967). While such proposals are emerging, it is often difficult to secure hard data concerning the need for these workers. This condition exists because many of the paraprofessional positions are just being developed and because systematic career ladders have not been established.

Of the four occupational categories under consideration, the most complete information concerning needed paraprofessionals is available for social welfare. According to Teeple (1968), employment in social

work occupations will change as shown in Table 1 between 1966 and 1975. However, even these figures are of limited value, for the social work category includes professional social workers, recreation and group workers, and nonprofessionals in standard social work programs. Conditions similar to these exist in the other three categories—education, firefighting, and law enforcement. Total employment figures for the four categories are shown in Table 2; but these should be used with caution as they reflect all workers, not just paraprofessionals.

Even with this scarcity of hard data, recommendations for preparing these individuals continue to be made. It has been recommended that a realistic goal for vocational education in social work would be to graduate between 500 and 1,000 students per year in the 1970's in each of the nation's major metropolitan areas (Teeple, 1968). Administering social welfare programs may create as many as 400,000 career openings in the 1970's, 175,000 of which will represent openings for high school or junior college graduates.

While similar figures are not available for education, it was reported in *A Study of Public Service Programs, College Level* (1969) that the interest in and expressed need for teacher aides among educators is generally enthusiastically positive. Material in this same report indicated a need for paraprofessionals in law enforcement and firefighting occupations.

In reference to these latter occupations—law enforcement and firefighting—one should consider their unique circumstances. While 10 percent of the cities on a national basis in 1967 had police departments which were below strength, it was not due principally to a shortage of police candidates, but to a shortage of successful ones. About 50,000 policemen were needed to fill the vacancies which existed during this year. During the 1970's, an estimated 15,000 opportunities for employment will occur each year for qualified candidates to enter police work. Though openings will occur in other law enforcement areas, police departments will offer the greatest number of employment opportunities. Because of this, vocational education should take the lead in preparing individuals to be successful once they have an opportunity to enter police work.

In firefighting, approximately 10,000 openings are expected to arise each year through the 1970's, but most openings—probably over 5,000 a year—will arise from the need to replace men who leave the occupation. Though these employment opportunities for firefighters are expected to be available during the next decade, it must be considered that the number of qualified applicants has been and may continue to be greater than the number of job openings. Vocational education could play an important role in this occupational area by providing pre-employment instruction to those persons interested in the firefighting occupations.

Paraprofessional preparation should be given consideration in relation to these areas, for Lecht (1968) has indicated that, based upon the projected percentage of increase in employment opportunities, three of the occupational categories under consideration—law enforcement (police), firefighters, and social welfare—were high growth occupations. He noted

TABLE 1

Employment In Occupations Related to Social Work, 1966 and 1975[1]

Occupational Category	*Number Employed*		*Percent Increase*
	1966	*1975*	
Social Work[2]	215,000	423,000[3]	97
New Career Type Occupation[4]	25,000	60,000	140

[1] Taken from information presented by Teeple (1968).

[2] The social work category includes professional social workers, recreation and group workers, and nonprofessionals in standard social work programs.

[3] Projected employment in 1975 required to achieve social work goals by major fields of practice.

[4] Not recognized as an occupation in 1960.

TABLE 2

Estimated Growth in Public Service Employment, 1960 to 1975[1]

Field of Practice	*Employment (in thousands)*		*Percentage of Employment Growth*	
	1960	*1975[2]*	*1760*	*1975*
Education (teachers)	1,945	3,063	57	
Teachers, elementary	978	1,233	26	
Teachers, secondary	603	1,100	82	
Teachers, college	206	455	121	
Teachers, other	158	275	74	
Firefighting (firemen)	148	250	69	
Law Enforcement (policemen)	287	518	80	
Social Welfare	132	483	266	
Public assistance	39.8	112.0	181	
Other family services	9.7	18.0	85	
Child welfare	27.3	95.5	250	
Rehabilitation services	2.8	7.0	150	
Medical and psychiatric	9.7	33.0	240	
Community and group services	21.6	71.0	229	
New careers[3]		60.0		
Other welfare	9.2	27.5	199	
Recreation	11.9	59.0	396	

[1] Taken from information presented by Teeple (1968) and in *Tomorrow's Manpower Needs* (U.S. Department of Labor, n.d.).

[2] Projected employment in 1975 required to achieve public service goals by major fields of practice.

[3] Not recognized as an occupation in 1960.

also that elementary and secondary teachers were moderate growth occupations. Similar trends were indicated in a report of a study, *Occupational Employment Patterns for 1960 and 1975 (1968),* which was sponsored by the Manpower Administration and in the *Occupational Outlook Handbook* (U.S. Department of Labor, n.d.).

One should note that Lecht's (1968) growth classification of occupational groups is based upon the projected percentage of increase in employment opportunities while the data in Table 2 reflect both the projected percentage of employment growth and the total expected numerical increase in the number of job openings. Educators should consider both the rate of growth and the total growth in planning educational programs related to public service occupations.

As a result of the information presented, it appears that primary consideration should be given to programs in social welfare and law enforcement and then in education and firefighting. Data concerning personnel needs in the employment area should be used in determining if there is a need for those programs rather than basing such decisions upon national data alone. In determining the employment opportunities which exist in the employment area served by the schools, recommendations such as those presented in *Procedure for Determining Vocational Education Needs Through Community Analysis* (Cromer, 1968) should be utilized.

Two types of changes are occurring in the public service delivery system which will create a need for increased numbers of paraprofessionals. First, a team approach similar to that now accepted in health occupations is becoming more common as a technique for delivering services. Second, many of the most rapidly growing fields in public service appear to be those which already are employing or seeking to employ nonprofessionals. Teeple (1968) indicated these changes were having a great effect on social welfare occupations.

New and emerging occupations have been and will continue to be caused by these changes. But where will they develop? As has been indicated earlier, most of the emerging paraprofessional public service occupations probably will occur in social welfare as a part of the new careers category. It should be noted that up to this time, these occupations developed because of a need, not because of a national application of job analysis techniques. Literature reviewed for this analysis revealed that this procedure might change in the future for writers such as Haskell (1969) have promoted job redesign. However, based upon previous information, educational programs will be required for some established occupations as well as the new and emerging occupations.

Vertical worker mobility has been slow to develop in the public service field. Authors such as Teeple (1968), Riessman (1967), White and Stein (Trainer's Manual, 1968), White (1969), Denham (1968), Soong (1969), and Grant (1969) have indicated a need to develop career ladders. To do this, techniques such as special job planning, remedial education programs, and changes in occupational and employment standards must be employed though shortages of manpower have aided this cause.

Now that the occupations for which preparation will be needed have been identified in a general manner, consideration should be given to the individual who received such preparation. Vocational education in the public service occupations is significant primarily as adult education in post-secondary institutions.

While most of the educational programs are offered at this level, pre-employment training for high school students is increasing in importance. Such training helps ensure a certain standard of competence on entry into public service occupations or a training program while young people learn about an occupation before committing themselves to employment or further training. Wall (1968) recommended a course of this type at the secondary level concerning police training in an effort to attract young men and upgrade the work force.

Though there is a need to expand programs in public service occupations to provide this type of training to students, the national policy of increasing and upgrading employment opportunities for the disadvantaged implies a continued emphasis on adult programs. Many job-oriented programs for the disadvantaged have been developed but additional and more refined programs will be needed for future training. The "New Careers" program has done much toward helping these individuals find meaningful employment (Riessman, n.d.).

In public service occupations, vocational education as described in the Vocational Amendments of 1968 exists side-by-side with other training systems designed for preparing individuals for employment. These systems include programs conducted under the auspices of several agencies; the Manpower Development and Training Act (MDTA), the Job Corps, The Office of Economic Opportunity, the Armed Forces, post-high school institutions, proprietary schools, and public and private organizations. But even with all of these systems turning out potential employees, the number of workers is inadequate. Because of this and the relative high cost of training programs, vocational education personnel have an opportunity to make an important contribution in this area.

High school vocational courses can provide pre-employment training and encourage students to remain in school and acquire credentials suitable for entrance into public service occupations or other specialized training programs. Vocational education along with the other programs also has provided basic education and occupational training courses needed to serve the needs of unemployed workers or workers whose job skills have been made obsolete by socioeconomic and technological changes. While increased educational opportunities are imperative, it must be realized that a period of time will be required before all workers entering public service occupations have an opportunity to participate in some type of formal training.

However, interested educators cannot wait. Educational programs must be developed at all levels for paraprofessionals, particularly in social welfare. Consideration should be given also to the establishment of such programs in each of the other occupational categories. In addition,

the possibility of creating in-service educational programs for law enforcement and firefighting personnel in an effort to upgrade the workers should be investigated.

Curricula and Curriculum Materials

Some educators have emphasized the importance of a curriculum by calling it the "backbone" of the instructional process. It serves as a road map for vocational instruction to chart the course from meager student interest and knowledge of a vocation or cluster of vocations to achievement of the goal of employment or from employment to advancement or improvement. The success of the instructional program is wrapped-up principally in the extent to which it contributes to this goal.

Because the curriculum is important, a common understanding of its meaning should be established. The term has been defined many ways but according to Leighbody it "is the sum total of the learning experiences for which the school has responsibility, whether they occur in school or not" (*Papers Presented at the National Conference on Curriculum Development in Vocational and Technical Education,* 1969). The curriculum should provide an outline of the practical training and related instruction required for the acquisition of a specific level of skill and knowledge in a particular occupation or cluster of occupations. With this as a basis, appropriate literature was reviewed to determine the availability of curricula for public service occupations. It should be noted that many of the documents reviewed as curricula were really multipurpose items which would fit also in the categories of curriculum guides and courses of study.

A great number of curricula for public service occupations were located and reviewed. These curricula were designed for preparing students for a single occupation or a cluster of occupations. *Psychiatric Aide* (Beard and Others, 1966), was prepared solely for the preparation of psychiatric aides while White's (1969) *New Careers in Local Government* contains a curriculum for meeting basic student needs related to new careers in local governments including those associated with police and recreation occupations.

This review of available literature revealed that curricula were available for the several occupations presently recognized in each of the occupational categories identified previously. For example, curricula were identified for use in preparing urban service aides (Kestenbaum, 1967), hospitality workers (Almarode, 1967), human service aides (Shatz and Steinberg, 1968), health auxiliary workers (Rabeau, 1966), teacher aides (Steinberg and Fishman, 1968), day-care aides (Fishman and Others, 1965), community/home health aides (Hicks, 1968), local government aides (White, 1969), patrolman's aides (White and Stein, 1968), social service aides (Soong and Others, 1969), management aides *(Management Aid in Low-Rent Public Housing Projects,* 1964), court reporters (*Court Reporting,* 1966), and firefighters *(Fire Protection Administration,* n.d.).

Curricula included in the review generally were designed for one of two groups—adults (pre-employment or post-employment) and high school students. Though instruction for these groups is interrelated, curricula

should be prepared for the type of student being served. The curriculum outlined in *Fire Protection Administration: Suggested Basic Course Outline* (n.d.) is for use with high school students to prepare them for entry into fire protection services while Thurman's (1969) pre-employment curriculum for teacher aides is designed for junior college enrollees and Milliken's (1966) curriculum in *The Ambulance Attendant* was organized for the basic training of employed ambulance personnel.

In addition, other curriculum materials were identified during the review and analysis. These materials were selected on the basis of Olivo's (Larson and Blake, 1969) definition of curriculum materials. He stated that "curriculum materials in vocational education refer to all the audiovisual sensory teaching-learning materials and devices used by the teacher and/or learner to teach or to master effectively and efficiently the skills,technologies, and general areas of learning required as a worker and as a citizen."

Workbooks, study guides, instructional guides, and reference materials generally were found to be available for public service occupations. However, program standards, programmed units, and suggestions for planning facilities were found to be lacking. Of these latter items, much information probably can be secured from organizations associated with the occupational area—organizations of law enforcement officials (policemen), firemen, teachers, or health workers. This is especially true for those occupations related to health, for an earlier investigation by the writer showed that such items were available for use in developing educational programs for the various health occupations.

Materials such as curricula, curriculum materials, or standards should not be considered impossible to obtain if they are not included in the bibliography. Many materials of this type were prepared locally and/or on a limited budget and were not available for distribution. Too, according to Leighbody, there is no way to know how much instructional material of this kind—syllabi or content documents—exists because it is not usually available for distribution *(Papers Presented at the National Conference on Curriculum Development in Vocational and Technical Education,* 1969). This lack of distribution may have caused a duplication of effort in that other persons had to prepare similar materials so they would be available for immediate use. The probability of such duplication was observed in several of the public service occupational areas, especially child care aides. If extra effort was required, one should consider that it is generally recommended that those persons associated with the program should participate in developing the required curriculums. If teachers are to contribute as they should to curriculum improvement, they must participate, on a continuing basis, in curriculum development. But such development is not the teacher's task alone. A team composed of teachers of related subjects, researchers, and specialists from the field of work should be involved *(A Guide for the Development of Curriculum in Vocational and Technical Education,* 1969).

No reference material was reviewed related to curriculum materials other than printed matter for public service education. Because of the

limited references to material such as films, television systems, projectors, and transparencies, it is very probable that "the media have been treated as addenda, as interesting appendages, instead of as the bricks from which actual curricula experiences are built" (Finn and Others, 1967).

Caution should be exercised in selecting and using curriculum materials related to these occupations. Each of the items reviewed was prepared for use with specific groups of people and this must be considered. Furthermore, consideration should be given to the fact that while many of the items reviewed were prepared only a few years ago, scientific developments may have resulted in these publications containing inaccurate information.

One should also note the wide variety of sources responsible for the preparation of the curricula and curriculum materials. Though educational institutions were responsible for much of the material reviewed, health and medical organizations, governmental agencies, publishing houses, and agencies associated with public service education also made a great contribution. Because of the many sources from which such materials may be obtained, care should be exercised to secure instructional material from a reliable and competent source.

Curriculum Development

Present practices and procedures related to curriculum development should be considered as a basis for developing curricula for public service occupations important during the 1970's. To discover the procedures and techniques used in developing curricula, it was considered necessary to review curricula, curriculum materials, and research reports. An attempt was made also to identify needed revisions in these procedures and techniques.

Analyses for Curriculum Development

Larson (1969) wrote that "curriculum development based on employment needs is the essence of effective payroll education for the youth and adult in today's world." Since this belief generally is accepted by vocational educators, job analysis has been used for many years as the basis for curriculum development in vocational education. Statements in the literature reviewed for this report indicated that this technique had been used for curriculum development in public service education.

Because of continued and increasing employment needs, job analysis—the process of studying the operations, duties, and organizational relationships of jobs to obtain data for reporting the significant worker's activities and requirements—will continue to be an important part of such development. However, such analysis will be conducted under stricter guidelines and controls.

White (1969) placed emphasis on functional job analysis for planning in *New Careers in Local Government.* Yagi and his associates (1968)

recognized the value of such analysis in the design and evaluation of vocational technical education curricula.

A second type of analysis which has been used in developing curricula for public service occupations is task analysis. This type of analysis is a method or process by which a task, a subunit of a job, is examined and its characteristics, in terms of certain attributes, are identified. Chenzoff defined a task as a "collection of activities that are; performed by one person, bounded by two events, directed toward achieving a single objective or output, and describable by means of the method set forth so that the resulting task description conveys enough information about the task to permit the necessary training decisions to be made" (Larson, 1969). Soong and Others (1969) used task analysis for curricula development in social service education for paraprofessionals. Use of this technique was also reported in the publication *Oregon Statewide Study of Systematic Vocational Education Planning, Implementation, Evaluation: Phase I—Manpower Needs, Data-Collection Devices and Occupational Clusters. Final Report* (1967). For persons interested in this type of analysis, this latter publication and an earlier report, *Oregon Statewide Study of Systematic Vocational Education Planning, Implementation, Evaluation: Phase I—Manpower Needs, Data-Collection Devices and Occupation Clusters. Exhibit A* (1965), should be reviewed. Furthermore, Mager and Beach (1967) suggested that this type of analysis be used as a basis from which to develop a course in their publication, *Developing Vocational Instruction.*

The third type of analysis which is sometimes used for developing curricula is occupational analysis. This type involves techniques similar to those of job or task analysis but the scope of the research is much greater. Occupational analysis has been described by Borow as the application of a systematic method of obtaining information focused on occupations and industries as well as on jobs, tasks, and positions (Larson, 1969).

Each of these three types of analysis has been used in developing curricula for public service occupations. In reviewing and analyzing the technique used in developing available curricula, this writer could not establish clear differences between the three procedures. This agrees with Larson's (1969) statement that positive distinctions between and among the characteristics of the various systems of analysis are often difficult to establish, primarily because of the overlapping in the application of terms.

Tuckman (1968) has introduced another type of analysis—structural analysis. This type of analysis is a systematic approach to curriculum development representing an attempt to organize terminal performance objectives for a unit of subject matter into a sequence of prerequisite competencies which must be satisfactorily mastered if successful performance is to occur. It involves asking the question: "What competencies must a person already possess in order to obtain a satisfactory performance level on some specified objective, given no instruction

beyond those definitions specific to the objective in question?" By asking this question of all identified competencies, a hierarchy of requisite competencies is generated which parallels the learning process appropriate to the final task.

Regardless of which type of analysis is selected for a particular situation, it is evident that analyses have been used for analyzing the work performed by individuals in public service occupations. But how is data for such analyses collected? Again, the curricula reviewed and analyzed showed that a variety of methods were used. These methods included mail surveys, interviews, observations, analyses of documents such as curricula and curriculum materials, and committees composed of persons associated with the occupation. The major portion of the curricula reviewed was developed by securing analysis information from educators and/or administrators and having the results reviewed by a specialist in the occupational area. While this analysis procedure has proved effective in the past, more sophisticated methods will be employed in the future. More emphasis will be directed toward obtaining data from persons closely associated with the occupation, particularly through observation of the worker's job performance and applying stringent guidelines and decision rules.

Simulation

Realism is important, but the high cost of equipment and facilities and the space required for realistic training in some occupations made it difficult to provide suitable educational programs. This is especially true for occupations such as firefighting and law enforcement in which truly realistic training for some phases of the occupations could endanger life and property if suitable conditions were not created. One possible method which has been used to alleviate this situation is simulation.

Simulation is the creation of a situation which could occur in real life, usually with the variables simplified, for the purpose of instruction (Tansey and Unwin, 1968). Such simulation would help to bridge the gap between practical knowledge and purely theoretical knowledge and make training available to a greater number of people. Buck and Monroe (1969) reported that simulation:

1. Begins with a devised set of circumstances;
2. Provides for low risk input;
3. Feeds back consequences symbolically; and
4. Is replicable.

This technique could be used to greater advantage in all of the occupational training programs though its use can be identified in present programs. For example, Naylor (1967) reported using role-playing audio-visual aids in preparing preschool teacher aides.

Systems Approach

Curriculum building in vocational education is taking on a systems approach in an effort to expand the usefulness of the various types of

analyses described earlier. These analyses will be incorporated into a systems approach—"a 'closed-loop' analytic and developmental process which can be utilized to continuously: 1) assess the results of performance, 2) maintain sensitivity to performance requirements, and 3) provide for the self-correction of performance in order that the specified objectives can be achieved" (Miller, 1967). This approach involves analysis, and further extends the development process by requiring performance objectives along with an educational strategy to meet these objectives. The systems approach also requires that selection criteria for students be established. According to Miller (1969), this last step is important; for unless the student has the proper educational background and personality characteristics, the drop-out rate will be high. Mager and Beach (1967) recognized the value for such criteria in their publication, *Developing Vocational Instruction.*

Use of the systems approach was evident in only one of the curriculum development projects reviewed, *Oregon Statewide Study of Systematic Vocational Education Planning, Implementation, Evaluation: Phase I—Manpower Needs, Data-Collection Devices and Occupational Clusters. Final Report* (1967). In addition, the procedure for designing curricula promoted by Denham and Others (1968) is really a systems approach.

None of the curricula or studies reviewed recognized behavioral objectives as being important. Difficulty in delineating job tasks as reported by Soong and his associates (1969) may be responsible for the general lack of such objectives. However, Mager (1962) has suggested criteria for use in developing these objectives in his book, *Preparing Instructional Objectives.*

Consideration of selection criteria appears to be of extreme importance in public service occupations. While material was reviewed concerning general occupational information such as *Job Guide For Young Workers, 1969-70 Edition* (n.d.) and the *Occupational Outlook Handbook* (U.S. Department of Labor, n.d.), more specific criteria were recognized as being important by Dyer (1966), Naylor (1967), and Denham and Others (1968) in their various reports. However, there is an apparent lack of specific criteria in many areas and efforts should be made to develop and distribute such items for the various occupations for student, counselor, and teacher use. Criteria should be prepared for high school, adult, and disadvantaged students in an effort to promote entry of individuals into public service occupations.

Broad Training Base

Many of the curricula reviewed were prepared for narrow occupational categories though efforts have been made to employ the cluster concept in preparing curricula for vocational education programs in public service occupations. Efforts were made to cluster tasks in the *Oregon Statewide Study of Systematic Vocational Education Planning, Implementation, Evaluation: Phase I—Manpower Needs, Data-Collection Devices and Occupational Clusters. Final Report* (1967). Janes (1966),

Shatz and Steinberg (1968), Soong and Others (1969), Denham and Others (1968), and Fishman and Others (1965) have promoted the use of core curricula in such training programs. Under the cluster concept, students enrolled in the program would receive a broad base of training which would help make them mobile and flexible in a job situation and provide increased employment opportunities and opportunities to grow (Maley, 1966).

Employment of the core concept might result in vertical mobility or initiation of the "ladder concept." This is important so students will not necessarily end up in dead-end positions or be unemployed, but will have the opportunity to advance or seek other employment. Soong and Others (1969) along with Denham and Others (1968) recognized the close relationship between these two items—core curriculum and mobility—in their separate reports. In addition, Soong and Others (1969), Denham and Others (1968), White (1969), Riessman *(Training the Nonprofessional,* 1967), Steinberg and Fishman (1968), White and Stein (1968), and Grant and Others (1969) indicated the need for the identification or formation of such "ladders."

Curriculum Materials

Curriculum materials have been treated as an important part of curriculum development in publications such as Dyer's (1966) *Orientation to Health Service Occupations and Nurse Aide Training, A Course for High School Seniors; Training Program for Child Care Aides, Suggested Guide* (1965); Rabeau's (1966) *Health Auxiliary Training, Instructor's Guide;* Steinberg and Fishman's (1968) *New Careers: The Teacher Aide;* and Goldberg and Others (1968) *New Careers: The Social Service Aide* but more emphasis should be placed in this area. This is important for while most educators know how to use media such as projectors, tape recorders, and television systems, few know when they should be used (Finn and Others, 1967). Instruction should be planned as a system to incorporate all of the media considered appropriate into a process which will result in the most efficient and effective learning situation. During this planning stage, publications similar to *Steps in Curriculum Construction* (1965) and *Audio-Visual Aids for Cooperative Education and Training* (Botham, 1967) should be used as reference material.

Little consideration appears to have been given to programmed instructional materials for public service occupations. Because of this, it is recommended that programmed instruction be integrated into formal training programs as it reportedly conserves instructor time, provides for flexible scheduling for large and small groups, and aids in standardizing course content. Research involving the use of such materials generally has shown that this method can be an effective part of the teaching-learning process.

Methodology of Curriculum Development

In the previous sections of this review and analysis, the need for educational programs, the availability of curricula and curriculum mate-

rials, and the techniques of curriculum development for public service occupations have been examined. With this as a basis, one can arrive at a prediction as to how curricula will be developed to prepare workers for their new and emerging roles and to update their skills and knowledge once they have entered an occupation.

It is possible and very probable that research being conducted at the present time will help to answer questions related to this preparation as they occur. However, the literature reviewed during the preparation of this analysis contained little material related to current projects of interest concerning curriculum development in public service occupations. This does not mean that many projects were not being conducted, but that such projects were of local interest or simply not reported in the literature reviewed.

Analyses for Curriculum Development

Even the lack of such research does not prevent the formulation of procedures for the development of curricula which will keep pace with change in public service occupations. As a basis for such development, one must consider that "a realistic, functional curriculum depends upon an understanding of the needs and requirements of the occupational field. Determination of the elements of the occupation (the skills, knowledge, habits, and attitudes essential to employment) demands an occupational analysis" (Larson and Blake, 1969). Thus, some type of analysis will be used as the primary means of securing data necessary for curriculum development. The use of these analyses is possible because "occupational education is based upon the premise that the factors contributing to success in an occupation are relatively well-known and can be converted into certain educational experiences" (Roney in Larson and Blake, 1969).

The analyses described earlier will be expanded to create a zoned analysis of the occupations. According to Larson, zoned analysis is a method of graphic delineation which may be explained as a system through which factors involved in any organization or research project may be arranged in orderly sequence on an easy-to-understand chart (Larson and Blake, 1969). Such an analysis proceeds from the general to the specific according to a predetermined and definite plan. This technique will aid the developer in preparing curricula for various employment levels within an occupation or in preparing a total curriculum which employs the "ladder concept." This latter curriculum would have multi-exit points and contribute to worker mobility within an occupational area.

How can one analyze a job which is just emerging? Such a situation requires the complete cooperation of personnel in education and public service occupations, for the analysis should begin as the change is introduced. Priore (1968) indicated that when the normal training patterns are disrupted by new processes, industry continues to fall back on on-the-job training. The innovation is demonstrated to the operator who then perfects the requisite skills while performing the job. This procedure is assumed to be true for innovations in public service occupations.

For the educator to analyze the job during this introductory period, a communications network must be established and maintained with public service personnel. Because the introduction of change is a highly variable process, a system should be developed to constantly monitor the occupation involved in an effort to detect change. If curricula were prepared on a national basis or even a state basis and then revised for relevance to students in a given school, such a monitoring system would be feasible.

It might be possible for educational specialists to develop this type of communications network by becoming involved in helping public service personnel identify the job descriptions for emerging occupations. However, it is doubtful if such an analysis can begin until the job has actually been established. An attempt to generate job descriptions with the cooperation of job incumbents and supervisory personnel of related jobs proved to be inadequate *(Oregon Statewide Study of Systematic Vocational Education Planning, Implementation, Evaluation: Phase I—Manpower Needs, Data-Collection Devices and Occupational Clusters. Final Report,* 1967).

Systems Approach

Regardless of where the curriculum is developed, one of the analyses will not be the sole basis for its development. The analyses described earlier will be incorporated into a systems approach similar to that described by Miller (1967). Once the job is analyzed, performance objectives will be selected along with selection criteria for the students (Miller, 1969). These selection criteria are important, as the curriculum should be designed for the types of persons as well as for the job or job cluster. In fact, Kurth stated that occupational analysis has two broad elements—competencies the worker has or brings to the job and competencies the occupation requires (Larson and Blake, 1969).

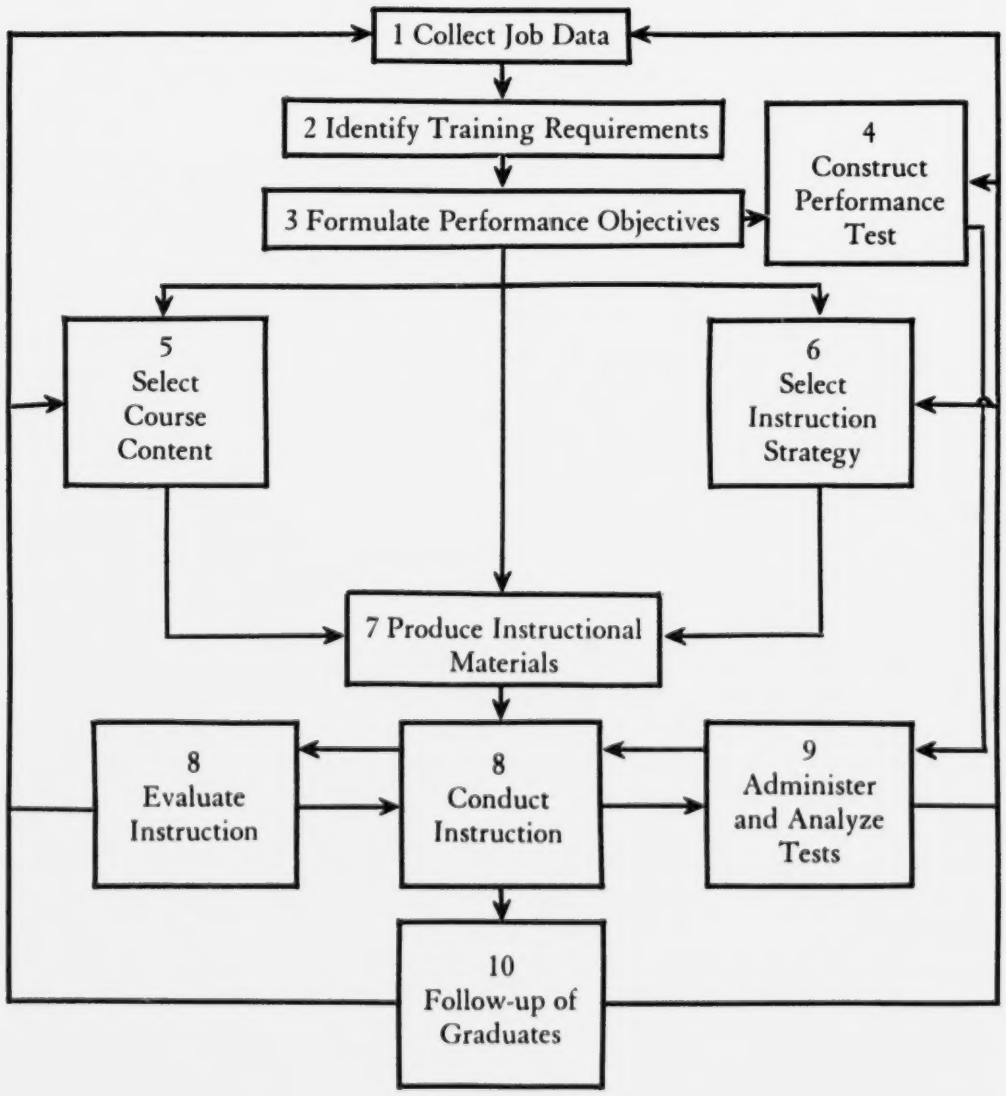
One systems approach to preparing students for an occupation is shown in Figure 1. This system includes provisions for the presentation and evaluation of instruction in addition to steps necessary for actual curriculum development. These additional steps, as should be noted from the arrows, are of value because they provide a feedback of information which may be used for curriculum improvement. In this system, the developers considered the type of student entering the program as part of step 6, select instruction strategy. The use of such a system in planning and conducting an educational program should lead to efficiency in training and better prepared individuals while it provides a means of constantly updating the training program. If such an approach is used, it should be designed to meet the requirements of the immediate situation.

Educational Curricula and Curriculum Materials

Curricula must be developed to cope with the changes taking place in public service occupations and the mobility of public service workers. They must be developed to prepare potential workers for existing occupa-

FIGURE 1

A SYSTEMS APPROACH TO OCCUPATIONAL TRAINING*



*W. R. Tracey, E. B. Flynn, and C. L. J. Legere, "Systems Approach Gets Results," *Training in Business and Industry,* IV (June 1967), pp. 17-21, 32-38.

tional opportunities as well as new and emerging occupational opportunities. Kurth has indicated that spiral curricula which ensure continuity and sequential learning of subject matter related to the students' interests and needs are of value (Larson and Blake, 1969). Such curricula may use multi-exit points so the students can leave the program with various skill and knowledge levels and then reenter the program to secure additional job preparation. Under this system, initial preparation will be provided in a cluster of occupations while training will become more specific as job placement approaches.

Instructional packets which include a curriculum, transparencies, equipment lists and specifications, a list of supplies, budgets, a bibliography, and current reference material should be prepared. Such preparation and packaging is important especially for those occupations with fewer workers and in which few materials are available and few training programs are provided. In addition, an evaluation process should be devised to ensure the value of these materials and to determine the value of materials already available.

In the preparation of these materials, consideration should be given to the use of the media such as television systems, computers, projectors, and tape recorders, and how they can contribute to the educational program. Such techniques as individually paced or programmed instruction and simulation also require consideration in future training programs.

Counseling Students

Counselors should have data which will indicate the degree to which aptitudes and interests of students are similar to those of individuals who have completed a given trade or industrial curriculum as well as persons who have successfully pursued related occupations for several years and have shown a reasonably good level of job proficiency (Doerr and Ferguson, 1968). Such data will increase in value as changes occur within the occupations, and a means of providing this type of information and keeping it current should be established within the educational community.

Performance proficiency measurements and standards should be considered as requirements in the educational program. Proficiency measurements will provide a means of measuring student progress or the lack thereof and serve as a basis for counseling. Proficiency standards would help in determining the degree to which the student has achieved skills and knowledge necessary for entry into and performance in an occupation. Such measurements and standards are expected to play an important role in preparing training programs for all groups though they are lacking in present curricula.

Summary

Providing public services of the highest quality is a goal that cannot be achieved where serious shortages of public service personnel exist. In attempting to alleviate these shortages, it is unreasonable to expect a neat balance between training completions and job openings. While educators and public service personnel should strive for such a balance, primary emphasis should be directed toward preparing the individual for employment. To do this, a curriculum based on occupational analysis and student interests and needs is required.

Curricula for new and emerging occupations or changing occupations should be developed and evaluated through an educational planning system. This planning will involve four major steps: occupational analysis, program planning, program development and testing, and documentation and dissemination of the results (Roney, 1967). At this time, it appears that personnel interested in public service education have been able to perform these steps in a positive manner. But while curricula and curriculum materials generally are available for those occupations recognized at the present time, improvements are needed and changes will be necessary. System changes for the future will involve placing additional emphasis on each of the four steps and employing stricter controls and guidelines to improve the quality of the various curricula. Special consideration will be given to occupational analysis and dissemination of the results. But while these four steps are important, it should be remembered that curriculum development starts with a job and ends with a student on the job, technically competent and able to succeed (Shoemaker in *Technical Education for the Seventies,* 1969).

New curricula alone are not enough. To provide and train the necessary workers, improved materials, counseling, and recruiting will be required along with improved uses of curriculum materials and teaching techniques. Efforts must be made to attract additional individuals from all segments of our society to meet future worker requirements. Additional research should be conducted to relate scientific change and the responsiveness of public service education curricula to this change.

In addition to these improvements, other changes must be made. Presently operating programs should be expanded to meet future needs. Offerings in post-high school programs should be increased and additional programs should be initiated for high school students as rapidly as possible.

No educational system can supply the relevant level of skills and competence required without receiving active feedback and support from persons associated with the related occupation (Kraft, 1969). Because of this, a systems approach should be used not only in developing curricula but also for providing instruction. Future curriculum development and instruction requires that a complete and flexible communications network be established among all those affected by the educational program.

DESCRIPTION OF THE BIBLIOGRAPHY

Compilation

References believed to be of value to persons desiring information concerning curricula for public service occupations were identified through a search of both Educational Resources Information Center (ERIC) publications and non-ERIC publications. ERIC publications included:

Abstracts of Instructional Materials in Vocational and Technical Education (AIM), Fall 1967—Spring 1970.
Abstracts of Research and Related Materials in Vocational and Technical Education (ARM), Fall 1967—Summer 1970.
Current Index to Journals in Education, Volume I; Volume II, Numbers 1-3.
Manpower Research: Inventory for Fiscal Years 1966 and 1967.
Manpower Research: Inventory for Fiscal Year 1968.
Research in Education (RIE), Volumes I-IV; Volume V, Numbers 1-7.

The three non-ERIC sources of information which were searched were:

CIRF Abstracts. Geneva, Switzerland: The International Vocational Training Information and Research Centre, C/O The International Labor Organization, Volumes I-VIII; Volume IX, First Dispatch (February 1970).
Corplan Associates of IIT Research Institute. *A Bibliography of Published and Unpublished Vocational and Technical Education Literature.* Illinois: Research Coordinating Unit, Vocational and Technical Education Division and State of Illinois, Board of Vocational Education and Rehabilitation, June 1966.
Ehrenreich, Julia W., ed. *Education Index.* New York: The H. W. Wilson Company, July 1964—May 1970.

While some of the later *Research in Education* indexes were searched manually by the writer, most were searched by computer. The remaining publications were searched manually by senior-level staff of The Center for Vocational and Technical Education, The Ohio State University, and/or by the writer. ERIC descriptors and strategies adapted from the *Thesaurus of ERIC Descriptors* and used in the searches are outlined below:

Curriculum	*and*	*Caseworkers*
or Educational Needs		or Fire
or Employment Qualifications		or Government Employees
or Instruction		or Officials
or Job Skills		or Police
		or Probation Workers
		or Service
		or Social Workers

An additional search was made of the *Research in Education* indexes by computer and manually by the writer to identify material related to curricula development for public service occupations. ERIC descriptors and strategies adapted from the *Thesaurus of ERIC Descriptors* and used in the search were:

Curriculum Design	*and*	*Cooperative Education*
or Curriculum Development		or Health Occupations
or Curriculum Planning		or Home Economics
		or Job Training
		or Technical Education
		or Vocational Education

In addition to these searches of specific sources, a cursory search was made of related materials available in the library of The Center for Vocational and Technical Education.

Organization

The bibliography prepared as a result of these searches was organized into two sections, literature identified from ERIC sources and that identified from non-ERIC sources. Items identified through the cursory search of library materials were placed into one of these sections on the basis of whether they were listed in the ERIC publication reviewed earlier. If the materials identified were not listed in these publications, they were classified as from non-ERIC sources.

These sections were then divided into five subsections for ease of use. Items listed in each of these subsections were arranged alphabetically by author or title. The five subsections selected were:

Need for educational programs—Materials cited in this section contain information related to the need for trained manpower in public service occupations and the types of programs through which training is provided.

Curricula and curriculum materials—This section includes citations which concern education in public service occupations. These citations include material concerning program descriptions, student needs, course content, references, and instructional materials suitable for secondary and post-secondary programs.

Curriculum development—Documents listed in this section are those which deal with or are related to some aspect of curriculum development in public service occupations such as related research reports and projects and needed revisions.

Methodology of curriculum development—This section of the bibliography contains documents concerning the procedures or methods and projects which have applicability to curriculum development for public service occupations that will be important during the next decade.

Information sources—Publications cited in this section are those which were searched in an attempt to identify relevant material or which contain information of a general nature related to public service occupations.

While the bibliographic entries were placed into these categories, such categorization is not meant to be exclusive. The various publications were listed in only one category, not in several categories. Because of this, references in categorical areas related to one's area of primary interest should be consulted for possible additional information.

Entries were selected on the basis of a limited review for their applicability to curricula for public service occupations. It is believed that the entries included in the bibliography are representative of materials available in relation to this topic and will provide a basic orientation to public service occupations. Yet, it must be realized that a truly complete search was not within the scope of this report. Many non-educational sources, including those prepared by military and industrial organizations, were not included in the basic search.

Availability of Documents

Publications and documents identified as pertinent to this review and analysis and listed in the bibliography may be secured through many sources. However, for easier access to these items, certain sources should be considered.

ERIC publications from which literature was identified may be determined by the prefix to the identifying document number. Prefixes found in this bibliography are:

Prefix	*Publication*
ED	RIE
EJ	CIJE
MP	Manpower Inventory
VT	AIM, ARM

Most ED and MP documents are available on microfiche (MF) or hard copy (HC) from the ERIC Document Reproduction Service (EDRS).

EDRS prices cited in this bibliography reflect pricing in effect at the time of publication. Recent price schedules and ordering information available in the current issue of *Research in Education, AIM,* or *ARM* should be consulted prior to placing an order.

CIJE entries usually can be found in periodicals which are available in local libraries. Items with a VT prefix can generally be found on microfiche in a VT-ERIC set which is available in many libraries or which may be ordered from EDRS. ED, MP, and VT items not available on microfiche or hard copy from EDRS may be secured from another source which is listed in the bibliography.

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